

NEMATODE CAUSED ROOT LESIONS

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A LESION HAS BEEN DEFINED AS AN ALTERATION OF STRUCTURE OR OF FUNCTIONAL CAPACITY DUE TO INJURY OR DISEASE. LESIONS ON ROOTS MAY RESULT FROM DAMAGE CAUSED BY PLANT DISEASES, INVERTEBRATE OR VERTEBRATE SOIL ANIMALS OR MECHANICAL DAMAGE. LESIONS CAUSED BY NEMATODES WOULD NOT DIFFER APPRECIABLY FROM THOSE RESULTING FROM MOST OTHER CAUSES. ONE MUST ACTUALLY FIND PLANT PARASITIC NEMATODES IN OR AT THE LESIONED SITE TO BE SURE THE LESION IS NEMATODE CAUSED.

LESIONS RESULT FROM TWO NEMATODE ACTIVITIES. MIGRATION THROUGH THE ROOT MECHANICALLY BREAKS DOWN PLANT TISSUES WHICH BECOME LESIONED PATHWAYS; ENZYME SECRETIONS INTO THE PLANT TISSUE BY THE NEMATODE ALSO CAUSE LESIONS. DISCOLORATION OF THE LESIONED PLANT TISSUE IS DUE TO AN ACCUMULATION OF PHENOLIC COMPOUNDS IN DERMAL AND EPIDERMAL TISSUE. AS TIME PROGRESSES SEVERELY LESIONED TISSUES MAY CONTAIN A VARIETY OF FLORA AND FAUNA INCLUDING BACTERIA, FUNGUS HYPHAE AND FRUCTIFICATIONS, BACTERIOPHAGOUS NEMATODES, OLIGOCHAETES, PROTOZOA, MITES AND INSECTS.

ALMOST ALL PLANT PARASITIC NEMATODES CAUSE SOME KIND OF ROOT LESION AT THE FEEDING SITE OR MIGRATION ROUTE. SOME, SUCH AS ROOT-KNOT (MELOIDOGYNE SPP.) AND CYST NEMATODES (HETERODERA SPP.) DO NOT CAUSE NOTICEABLE LESIONS. ROOT-KNOT LARVAE MIGRATE EXTRACELLULARLY IN ROOTS THEREBY PREVENTING EXCESSIVE MIGRATION DAMAGE. SOME NEMATODES SUCH AS SPIRAL NEMATODES (FIG. 1) INDUCE SMALL LOCALIZED LESIONS ON ROOTS. TWO NEMATODES, LESION (PRATYLENCHUS SPP.) AND BURROWING NEMATODE (RADOPHOLUS SIMILIS) (FIG. 2), BOTH ENDOPARASITIC, CAUSE SEVERE ROOT LESIONS. IN SOME CASES THE ENTIRE ROOT SYSTEM IS ONE CONTINUOUS LESION CAUSED BY THE COALESCENCE OF MANY SMALLER LESIONS. WHEN THIS HAPPENS THE PLANT LOSES ITS SUPPORT AND IS TOPPLED EASILY BY MECHANICAL PRESSURES OR WIND. LESIONS MAY GIRDLE A ROOT (FIG. 3) RESULTING IN THE LOWER PART FALLING OFF.

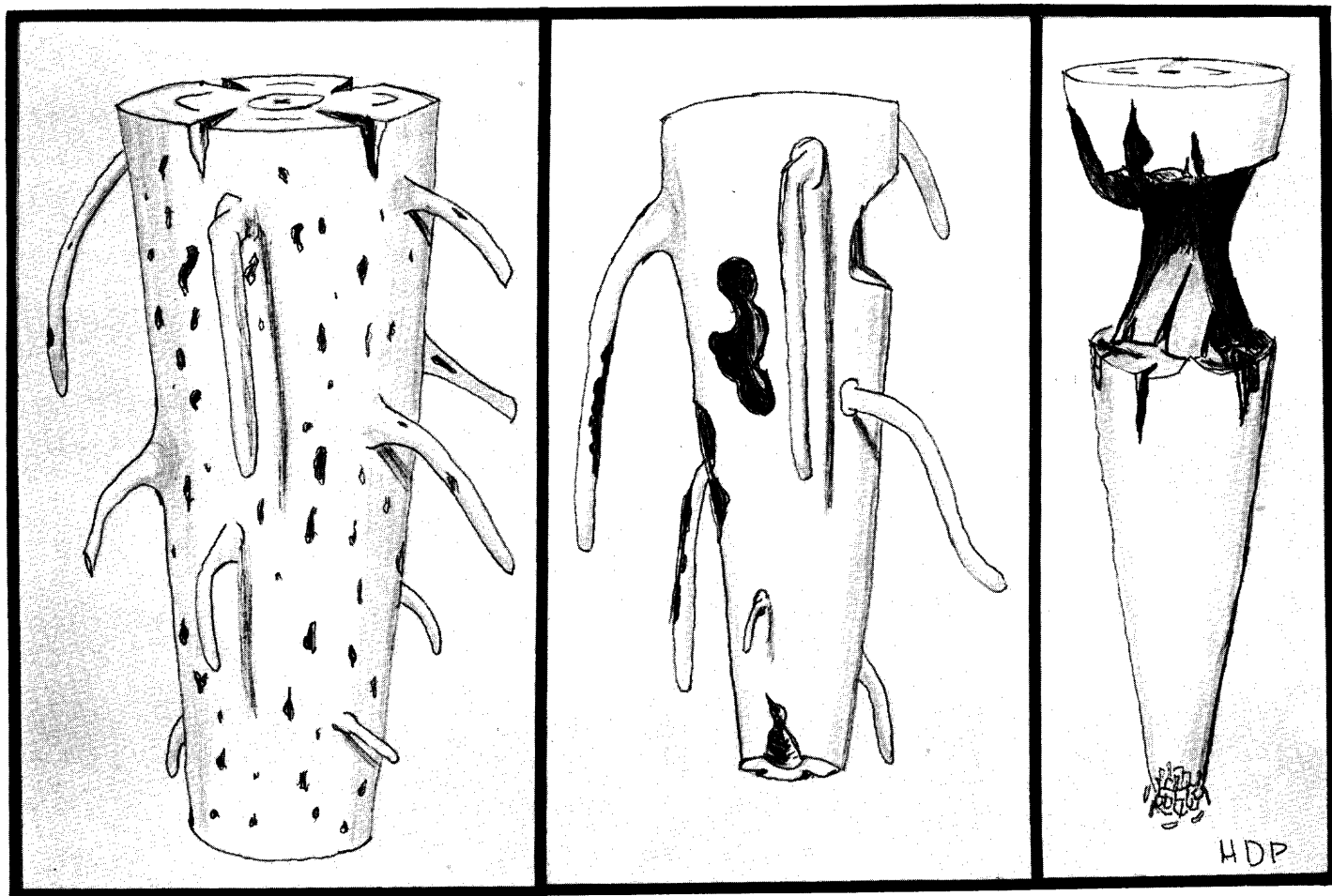


FIG. 1 SMALL LESIONS

FIG. 2 LARGE LESIONS

FIG. 3 LESIONS
GIRDLING A ROOT

